

## CLAIMS

1. A semiconductor device comprising:  
an antenna,  
an integrated circuit comprising a thin film transistor,  
5 a light-emitting element, and  
a light-receiving element,  
wherein the light-emitting element and the light-receiving element each have a layer for conducting photoelectric conversion using a non-single crystal thin film, and  
wherein the antenna, the light-emitting element and the light-receiving element  
10 are electrically connected to the integrated circuit.
2. A semiconductor device comprising:  
an antenna,  
an integrated circuit comprising a thin film transistor,  
15 a light-emitting element, and  
a light-receiving element,  
wherein the antenna, the light-emitting element and the light-receiving element  
are electrically connected to the integrated circuit, and  
wherein the integrated circuit, the light-emitting element and the  
20 light-receiving element are formed integrally.
3. A semiconductor device comprising:  
an antenna,  
an integrated circuit comprising a thin film transistor,  
25 a light-emitting element, and  
a light-receiving element,  
wherein the antenna, the light-emitting element and the light-receiving element  
are electrically connected to the integrated circuit, and  
wherein the antenna, the integrated circuit, the light-emitting element and the  
30 light-receiving element are formed integrally.

4. A semiconductor device comprising:

an integrated circuit,

a light-emitting element, and

5 a light-receiving element,

wherein the integrated circuit comprises a connection terminal, a rectification circuit that generates power supply voltage from an alternating current signal that is input to the connection terminal by an antenna, a demodulation circuit for demodulating a first signal received in the light-receiving element, and a logic circuit that conducts arithmetic operation according to the first signal that is demodulated to generate a second signal,

10 wherein the light-emitting element can convert the second signal to an optical signal, and

15 wherein the integrated circuit, the light-emitting element and the light-receiving element are formed integrally.

5. A semiconductor device comprising:

an antenna,

an integrated circuit comprising a thin film transistor,

20 a light-emitting element, and

a light-receiving element,

wherein the light-emitting element and the light-receiving element each have a layer for conducting photoelectric conversion using a non-single crystal thin film,

25 wherein the antenna, the light-emitting element and the light-receiving element are electrically connected to the integrated circuit, and

wherein the integrated circuit, the light-emitting element and the light-receiving element are formed over a first substrate and then separated therefrom, and attached to a second substrate.

30 6. A semiconductor device comprising:

an antenna,

an integrated circuit comprising a thin film transistor,

a light-emitting element, and

a light-receiving element,

5 wherein the antenna, the light-emitting element and the light-receiving element are electrically connected to the integrated circuit, and

wherein the integrated circuit, the light-emitting element and the light-receiving element are formed over a first substrate and then separated therefrom, and attached to a second substrate.

10

7. A semiconductor device comprising:

an antenna,

an integrated circuit comprising a thin film transistor,

a light-emitting element, and

15 a light-receiving element,

wherein the antenna, the light-emitting element and the light-receiving element are electrically connected to the integrated circuit, and

wherein the antenna, the integrated circuit, the light-emitting element and the light-receiving element are formed over a first substrate and then separated therefrom, and attached to a second substrate.

20

8. A semiconductor device comprising:

an integrated circuit,

a light-emitting element, and

25 a light-receiving element,

wherein the integrated circuit comprises a connection terminal, a rectification circuit that generates power supply voltage from an alternating current signal that is input to the connection terminal by an antenna, a demodulation circuit for demodulating a first signal received in the light-receiving element, and a logic circuit that conducts arithmetic operation according to the first signal that is demodulated to generate a

30

second signal,

wherein the light-emitting element can convert the second signal to an optical signal,

5 wherein the integrated circuit, the light-emitting element and the light-receiving element are formed integrally, and

wherein the integrated circuit, the light-emitting element and the light-receiving element are formed over a first substrate and then separated therefrom, and attached to a second substrate.

10 9. A semiconductor device according to any one of Claims 5 to 8, wherein the first substrate is a glass substrate and the second substrate is a plastic substrate.

10. An IC card comprising:

an antenna,

15 an integrated circuit comprising a thin film transistor,

a light-emitting element, and

a light-receiving element,

wherein the antenna, the light-emitting element and the light-receiving element are electrically connected to the integrated circuit, and

20 wherein the integrated circuit, the light-emitting element and the light-receiving element are formed integrally.

11. An IC card according to claim 10, wherein the antenna, the integrated circuit, the light-emitting element and the light-receiving element are formed integrally.

25

12. An IC card comprising:

an integrated circuit,

a light-emitting element, and

a light-receiving element,

30 wherein the integrated circuit comprises a connection terminal, a rectification

circuit that generates power supply voltage from an alternating current signal that is input to the connection terminal by an antenna, a demodulation circuit for demodulating a first signal received in the light-receiving element, and a logic circuit that conducts arithmetic operation according to the first signal that is demodulated to generate a

5 second signal,

wherein the light-emitting element can convert the second signal to an optical signal, and

wherein the integrated circuit, the light-emitting element and the light-receiving element are formed integrally.

10

13. An IC card comprising:

an antenna,

an integrated circuit comprising a thin film transistor,

a light-emitting element, and

15

a light-receiving element,

wherein the antenna, the light-emitting element and the light-receiving element are electrically connected to the integrated circuit, and

wherein the integrated circuit, the light-emitting element and the light-receiving element are formed over a first substrate and then separated therefrom,

20

and attached to a second substrate.

14. An IC card according to claim 13, wherein the antenna, the integrated circuit, the light-emitting element and the light-receiving element are formed over a first substrate and then separated therefrom, and attached to a second substrate.

25

15. An IC card according to claim 12, wherein the integrated circuit, the light-emitting element and the light-receiving element are formed over a first substrate and then separated therefrom, and attached to a second substrate.

30

16. The IC card according to any one of Claims 13 to 15, wherein the first substrate is a glass substrate and the second substrate is a plastic substrate.